

# Compost Operations: Regulations and Best Management Practices Workshop



## State Regulation Overview: Water Resources Division

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# Goal

- The WRD is committed to partnering with the yard clippings composting industry in order to advise operators of the appropriate options for handling compost wastewater and storm water discharged to waters of the state.





# Outline

- Definitions
- Background
- Environmental Impacts of Compost Wastewater Discharges
- WRD 2014 Study
- Storm Water National Pollution Discharge Elimination System (NPDES) Permitting
- Individual Wastewater NPDES Discharge Permit
- Groundwater Discharge Permit
- WRD Commitment





# Definitions

- **Yard Clippings** – compost material that consists of leaves, grass clipping, vegetable or other garden debris, shrubbery, or brush and tree trimmings, that can be converted to compost humus.
- **Process Water** – water used to wet the compost piles
- **Leachate** – liquid that has moved through the compost pile and exits the bottom of the pile
- **Compost Wastewater** – a liquid that is comprised of process water; wash water; and/or leachate that ponds, flows laterally from the base of the compost pile, or collects in an under-drainage system.
- **Waters of the State** – groundwater, lakes, rivers, wetlands, streams, and all other watercourses and waters, including the Great Lakes, within the jurisdiction of the State of Michigan.



# Background

- Yard clippings prohibited from disposal in landfills in 1995
- Numerous yard clippings composting facilities have been established since then
- WRD became aware of issues associated with yard clippings composting facilities - primarily discharges of compost wastewater to waters of the state
- A workgroup comprised of WRD and OWMRP staff was formed to address these issues





# Environmental Impacts

- Compost wastewater discharges have been found to contain potentially significant levels of:
  - Biochemical and Chemical Oxygen Demand (BOD/COD)
  - Nutrients (Nitrogen and Phosphorus)
  - Fecal Coliform/E-coli
  - Tannins and Lignins
  - Phenols
  - Heavy Metals
  - Oil and Grease
  - Soluble Salts
  - Herbicides, Pesticides, and Fungicides



# 2014 WRD Study

- Included six yard clippings compost sites
- Compost wastewater samples were collected from each site and were analyzed for:
  - Michigan 10 Metals
  - Carbonaceous Biochemical Oxygen Demand, 5-day (CBOD<sub>5</sub>)
  - COD
  - Total Suspended Solids (TSS)
  - Total Dissolved Solids (TDS)
  - Fecal Coliform
  - Total Phosphorus
  - Ammonia Nitrogen
  - Nitrate/Nitrite
  - pH



# 2014 WRD Study Cont.



- Compost wastewater sample collection areas





# 2014 WRD Study Cont.



- Compost wastewater samples collected were dark in color



## 2014 WRD Study Cont.

- Sample results revealed TSS, TDS, Fecal Coliform, Total Phosphorus, and Ammonia Nitrogen were present at concentrations exceeding Water Quality Standards
- Arsenic, Copper, Zinc, and CBOD<sub>5</sub> were detected at levels of potential concern





# Applicable Discharge Permits

- Storm Water Discharge Permitting
  - Industrial Storm Water
  - Municipal Separate Storm Sewer System (MS<sub>4</sub>)
- Compost Wastewater Discharge Permitting
  - NPDES Individual Permit
  - Groundwater Discharge Permit



# Storm Water Discharge Permit: Industrial Storm Water Permit

- How to avoid an Storm Water Discharge Permit
  - Prevent the discharge of storm water from the site to surface waters of the state
  - Meet the conditions of a No Exposure Certification meaning...manage the site in a way that prevents the exposure of storm water to all relevant composting activities and materials





# Storm Water Discharge Permit: Industrial Storm Water Permit


- Facilities that meet ALL the following criteria need a permit:
  - Regulated Standard Industrial Classification (SIC) code and / or meets the definition of a yard clippings composting facility under the Part 115 rules
  - Exposure of industrial materials and / or activities to storm water
  - Storm water from regulated areas of the facility discharge to the surface waters of the state



# Storm Water Discharge Permit: MS4 Storm Water Permit

- Municipalities with MS4 permit coverage are required to appropriately manage the yard clippings composting facilities they have jurisdiction over
- Contaminated storm water and / or compost wastewater discharges to an MS4 or the waters of the state without the appropriate permit coverage would be considered illicit discharges under the MS4 permit





# Compost Wastewater Discharge Permitting: Individual NPDES Permit

- Discharges of compost wastewater to surface waters of the state require an individual NPDES permit
- Individual NPDES permits are:
  - Facility specific
  - Tailored to facility-specific discharges
  - Specific to the receiving water the facility discharges to

# Compost Wastewater Discharge Permitting: Individual NPDES Permit

- The NPDES permit would include:
  - Effluent limitations
  - Monitoring requirements
  - Storm water management language and requirements







# Compost Wastewater Discharge Permitting: Groundwater Permit

- Discharges of compost wastewater to the groundwater of the state would require Groundwater Discharge Permit
- A Groundwater Discharge Permit is site specific and would include:
  - Effluent limitations
  - Monitoring requirements
  - An acceptable compost wastewater collection and discharge system



# Compost Wastewater Discharge Permitting

- How to avoid a wastewater discharge permit:
  - Manage the yard clippings composting facility in a manner that compost wastewater is not generated
  - If compost wastewater is generated:
    - Pump and haul
    - Discharge to a sanitary sewer system (with proper approval)
    - Controlled reapplication of the compost wastewater to actively composting piles





# WRD Commitment

- Assist operators in evaluating options for reducing or eliminating compost wastewater or storm water discharges
- Allocate appropriate resources to ensure yard operators have the necessary tools and knowledge to be leaders in environmental stewardship
- If wastewater discharges cannot be eliminated, the WRD will work with operators on solutions to protect water quality through existing permitting processes



# Questions?





# Program Contacts

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